COMMONWEALTH OF VIRGINIA
Department of Environmental Quality
Northern Virginia Regional Office

STATEMENT OF LEGAL AND FACTUAL BASIS

Waste Management, Inc. / King George Landfill, Inc.
King George County Landfill
10376 Bullock Drive, King George, VA 22485
Permit No. VA-40903

Title V of the 1990 Clean Air Act Amendments required each state to develop a permit program to ensure that certain facilities have federal Air Pollution Operating Permits, called Title V Operating Permits. As required by 40 CFR Part 70 and 9 VAC 5 Chapter 80, King George Landfill, Inc. has applied for a Title V Operating Permit for its State Rt. 665, King George facility. The Department has reviewed the application and has prepared a draft Title V Operating Permit.

Engineer/Permit Contact: _____ Date: _____

Air Permit Manager: _____ Date: _____

Regional Permit Manager: _____ Date: _____

FACILITY INFORMATION

Permittee/Facility
Waste Management, Inc. / King George Landfill, Inc.
10376 Bullock Drive
King George, VA 22485

King George County Landfill
State Route 665, 1.1 Mile North of State Route 3

SOURCE DESCRIPTION

SIC Code: 4953 - This facility consists of a municipal solid waste (MSW) landfill that is a generator of landfill gas, including non-methane organic carbon compounds (NMOCs) . Gas generated is collected and burned in an open flare. As more gas is generated, the open flare will be replaced with one or more enclosed flares. The facility is a Title V major source of NMOCs as defined under the New Source Performance Standard (NSPS) WWW for MSW landfills. This source is located in an attainment area for all pollutants, and is not a PSD major source.

The King George County Landfill (KGCL) is a non-hazardous municipal solid waste (MSW) land disposal facility located along State Route 665, approximately 1.1 miles north of State Route 3, and approximately 9 miles east of Fredericksburg in King George County, Virginia. The land on which KGCL is located is owned by King George County and is leased to King George Landfill, Inc., which operates the facility. King George Landfill, Inc. is a wholly owned subsidiary of Waste Management, Inc. The facility currently operates under the terms of a State Operating Permit (SOP) dated January 19, 2001, issued by the Virginia Department of Environmental Quality (DEQ) Air Division. A copy of the SOP is included as Attachment ›A:. The facility also operates under the terms of Solid Waste Permit No. 586, issued April 21, 1997, by the Waste Division of DEQ.

The equivalent of an Initial Design Capacity Report and Initial NMOC Emission Report, as required by 40 CFR 60.752(b), was included as part of the permittee's application for the SOP dated January 19, 2001. According to the application, the KGCL has a design capacity of 27.2 MM Mg (30 MM tons). The landfill has an estimated minimum operating life of approximately 50 years based on the current amount of waste in place and the average expected acceptance rate beyond 1998.

KGCL began accepting waste in November 1996. The DEQ Solid Waste Permit specifies the allowable waste types that can be received and disposed of at KGCL. In the Solid Waste Permit, no restrictions are made prohibiting or limiting the disposal of commercial and industrial waste at the KGCL. It is anticipated that ash from incinerators will eventually compose up to 50% of the incoming landfill waste stream. According to AP-42 (p 2.4-4), MSW facilities disposing of commercial and industrial waste are considered to be co-disposal facilities.

COMPLIANCE STATUS

The facility is inspected once per year. The landfill was found to be in compliance upon completion of the last inspection. The facility has certified to DEQ that it remains in compliance with all applicable requirements.

EMISSION UNIT AND CONTROL DEVICE IDENTIFICATION

Equipment to be operated consists of:

Emission Unit ID	Emission Unit Description	Size/Rated Capacity	Pollution Control Device Description (PCD)	PCD ID	Stack ID	Pollutant Controlled	Applicable Permit Date
L01	Municipal Solid Waste Landfill operating since 1996, see (1) below	27,200,000 Mg, see (2) below	Flare	__	001	NMOC	January 19, 2001
L02	Landfill Surface and Roads	__	__	__	__	__	__

(1) The landfill first started accepting waste in November, 1996 and is projected to have capacity for 50 years and remain open until 2047.

(2) Landfill capacity taken from Title V application

EMISSIONS INVENTORY

1998 Facility NMOC and Criteria Air Pollutant Emissions:

Emissions are summarized in the following tables. See Attachment B for a copy of the Landfill Gas Emission Model Estimates for methane, NMOC and hazardous air pollutants.

1998 Criteria Pollutant and NMOC Emissions in Tons/Year							
Emission Unit	**Throughput**	**VOC**	**NMOC**	**CO**	**SO_2**	**PM_{10}**	**NO_x**
L01, Landfill (1)	6.452×10^5 Mg waste in place	16.3 tons/year	19.2 tons/year	-	-	-	-

(1) The NMOCs from the landfill are calculated using the Landfill Gas Emissions Model, Version 2.0, available from the TTN web site. The calculation of emissions assumes a C_{NMOC} concentration of 612.7 ppmv and that 85% of total NMOCs generated by landfill are VOCs. In January, 1999, the results of a site specific Tier 2 analysis were submitted. These calculations reflect the results of the test.

1998 Facility Hazardous Air Pollutant Emissions:

Emission Unit	**1998 Hazardous Air Pollutant Emissions* in Tons/Year**
Landfill fugitive emissions	2.1
Controlled emissions	0
Secondary emission from control device	0
Total	**2.1**

* - HAP emission estimate is based on Landfill Gas Emissions Model, Version 2.0 default AP-42 factors and that 11% of NMOCs are HAPs. It should be noted that the majority of HAP emissions are simultaneously accounted for in the VOC emission quantity listed under Criteria Pollutants and should not be added directly to the quantity of VOCs for emission fee purposes.

EMISSION UNIT APPLICABLE REQUIREMENTS - Landfill (Emission Unit L01)

Part A - Limitations (L01 - Landfill)

The following limits come from 40 CFR 60 Subpart WWW (July 1, 1999 Edition)

60.752(b)(2)(ii) SOP- #9 Install a collection and control system that captures the gas generated within the landfill no later than June 1, 2001.

An approved gas collection and control system has been installed and became operational on December 12, 2000.

60.752(b)(2)(iii) SOP - #4 & #7 Route all the collected gas to a control system that complies with the requirements of (A) or (B) below:

(A) An open flare designed and operated in accordance with '60.18;
(B) An enclosed flare designed and operated to either reduce NMOC by 98 weight percent or reduce the outlet NMOC concentration to less than 20 parts per million by volume, dry basis as hexane at 3 percent oxygen. The reduction efficiency or parts per million by volume shall be established by an initial performance test to be completed no later than 180 days after the initial startup of the approved control system using the test methods specified in '60.754(d). *(Described in Testing)*

The SOP requires the installation of an active collection system and the use of an open flare initially followed by the use of an enclosed flare when generation of gas increases at the landfill.

60.753(a) The permittee shall operate the collection system such that gas is collected from each area, cell or group of cells in the M.S.W. landfill in which solid waste has been placed for 5 years or more if active or 2 years or more if closed or at final grade.

60.753(b) The affected facility shall operate the system at negative pressure at each wellhead except in case of fire or increase in well temperature or in the case of a decommissioned well.

60.753(c) The affected facility shall operate each interior wellhead in the collection system with a gas temperature less than 55°C and with either a nitrogen level less than 20% or an oxygen level less than 5%.

60.753(d) The affected facility shall operate so that the methane concentration is less than 500 parts per million above background at the surface of the landfill. Shall conduct surface testing around the perimeter of the collection area and along a pattern that traverses the landfill at thirty meter intervals and where visual observations indicate elevated concentrations of landfill gas, such as distressed vegetation and cracks or seeps in the cover.

60.755(e) The provisions for O_2, N_2, temperature, and methane concentrations apply at all times except during periods of start-up, shutdown, or malfunction, provided that the duration of start-up, shutdown, or malfunction shall not exceed five days for collection systems and shall not exceed one hour for treatment or control devices.

60.753(e) The affected facility shall operate such that all collected gases are vented to a control system. In the event the system is inoperable, the gas mover system shall be shut down and all valves in the collection and control system contributing to venting of the gas to the atmosphere shall be closed within one hour.

60.753(f) The permittee shall operate the control system at all times when collected gas is routed to the system.

60.754(c) When calculating emissions for PSD purposes from the landfill, shall estimate the NMOC emission rate for comparison to the PSD major source and significance levels using AP-42 procedures.

60.755(a)(4) No expansion of the system is required during the first 180 days after gas collection system startup.

60.755(b) The permittee shall place each well or design component as specified in the design plan, and shall install wells no later than sixty days after the date on which the initial solid waste has been in place in any cell or group of cells for a period of five years or more if active or two years or more if closed or at final grade.

The following limits come from the State Operating Permit dated January 19, 2001

Condtion 3
9 VAC 5-80-850F

No make-up fuel may be used in conjunction with the LFG collection and control system. Use of make-up fuel may require a permit pursuant to VR 120-01. Any change in the LFG collection and control system to provide for energy recovery may require a permit pursuant to VR 120-01.

Condition 6
9 VAC 5-80-850F

The enclosed flare and open flare combined shall consume no more than 3.27×10^9 cubic feet of LFG per year, calculated monthly as the sum of each consecutive twelve month period.

Condition 7
9 VAC 5-80-850F
9 VAC 5-80-880

Emissions from the operation of the enclosed flare system shall not exceed the limits specified below:

Non Methane Organic Compounds (as hexane)	5.0 lbs/hr	21.93 tons/yr
Nitrogen Oxides (as NO_2)	10.3 lbs/hr	45.1 tons/yr
Carbon Monoxide	22.1 lbs/hr	96.6 tons/yr
Sulfur Dioxide	4.67 lbs/hr	20.4 tons/yr

Condition 8
9 VAC 5-80-850F

Visible emissions from the enclosed flare(s) shall not exceed twenty percent opacity as determined by EPA Method 9 (40 CFR 60 Appendix A), except during one six-minute period in any one hour in which visible emissions shall not exceed

27 percent opacity. This condition applies at all times except during start-up, shutdown, and malfunction.

The following limitations are taken from 40 CFR 60 Subpart A (General Provisions) Section 18:

60.18(c)(1) Flares shall be designed for and operated with no visible emissions, except for periods not to exceed a total of five minutes during any two consecutive hours.

60.18(c)(3)(ii) The net heating value of the landfill gas must be 200 BTU/scf or greater.

60.18(c)(4)(i) The affected facilities shall be designed for and operated with an exit velocity less than 60 ft/second.

Part B - Monitoring (L01 - Landfill)

All New Source Performance Standards (NSPS) under the authority of Section 111 of 40 CFR Part 60 proposed after November 15, 1990 are presumed to have adequate monitoring to meet the Part 70 (Title V) periodic monitoring requirements. NSPS WWW was proposed on May 30, 1991. As such, no additional monitoring requirements for the landfill=s collection and control system have been added to assure compliance with the applicable requirements contained within the subpart. However, periodic monitoring requirements have been added to assure compliance with applicable requirements contained in the permittee=s State Operating Permit dated January 19, 2001.

The following monitoring requirements are taken from 40 CFR 60 WWW:

60.755(a)(3)
SOP - #15 The permittee shall measure gauge pressure in the header at each individual well monthly. If a positive pressure exists, corrective action shall be taken within five calendar days of the exceedance. If a negative pressure cannot be achieved without excess air infiltration within fifteen calendar days of the first measurement, the system shall be expanded within 120 days of the initial measurement of positive pressure.

60.755(a)(5)
SOP - #15 The permittee shall monitor each well monthly for temperature and nitrogen or oxygen. If a well exceeds one of these operating parameters, action shall be initiated to correct the exceedance within five calendar days. If correction of the exceedance cannot be achieved within fifteen calendar days of the first measurement, the gas collection system shall be expanded to correct the exceedance within 120 days of the initial exceedance.

60.755(c)(1)
SOP - #15 The permittee shall monitor surface concentrations of methane along the entire perimeter of the collection area and along a pattern that traverses the landfill at thirty meter intervals for each collection area on a quarterly basis using methods described in Testing.

60.755(c)(4)
SOP - #15 Any reading of 500 ppm or more above background at any location shall be recorded as a monitored exceedance and the actions specified below shall be taken. As long as the specified actions are taken, the exceedance is not a violation of the operational requirements.

(i) location shall be marked and recorded
(ii) cover maintenance or adjustments to the vacuum of the adjacent wells to increase the gas collection in the vicinity of the exceedance shall be made and the location shall be re-monitored within ten calendar days of detecting the exceedance.
(iii) if the remonitoring of the location shows a second exceedance, additional corrective action shall be taken and the location shall be monitored again within ten days of the second exceedance. If the remonitoring shows a third exceedance for the location, a new well or other collection device shall be installed within 120 calendar days of the initial exceedance.
(Iv) Any location that initially showed an exceedance but has a methane concentration less than 500 ppm methane above background at the ten day re-monitoring shall be re-monitored one month from the initial exceedance. If the one month remonitoring shows a concentration less than 500 ppmv above background, no further monitoring of that location is required until the next quarterly monitoring. If the one month remonitoring shows an exceedance, either iii or v will be performed.
(v) For any location where monitored methane concentration equals or exceeds 500 ppm above background three times within a quarterly period, a new well or other collection device shall be installed within 120 calendar days of the initial exceedance.

60.755(c)(5) SOP - #15 The permittee shall implement a program to monitor for cover integrity and implement cover repairs as necessary on a monthly basis.

60.756(a) SOP - #15 The permittee shall install a sampling port and a temperature measuring device or a port for temperature measurements at each wellhead. Shall measure the gauge pressure in the gas collection header on a monthly basis. Shall monitor nitrogen or oxygen concentration in the landfill gas on a monthly basis. Shall monitor temperature of the landfill gas on a monthly basis.

60.756(b) SOP - #15 For each enclosed flare, the permittee shall calibrate, maintain, and operate according to the manufacturer's specifications the following:
(1) Temperature monitoring device equipped with a continuous recorder and having a minimum accuracy of "1 percent of the temperature being measured expressed in degrees Celsius or "0.5°C, whichever is greater.
(2) A device to record flow to the flare. Shall install, calibrate, and maintain a gas flow rate measuring device that shall record flow to the flare at least every fifteen minutes or install a lock on the bypass valve.

60.756(c) 9 VAC 5-80-890 SOP - #13 For open flares, install, calibrate, maintain and operate according to manufacturers specifications the following equipment:

(1) Heat sensing device at the flame to indicate the continuous presence of
(2) A flow rate measuring device that shall measure and record total flow of landfill gas at the common header pipe that leads to the control device(s) at least

every fifteen minutes.

(3) A flow rate measuring device that shall measure and record flow of gas through the bypass line at least every fifteen minutes or secure the bypass line valve around the flare(s) in the closed position with a lock and key. If the bypass valve is secured with a lock, a visual inspection of the lock shall be performed at least once every month to ensure that the valve remains closed.

The requirement to install, calibrate, maintain and operate a flow rate measuring device that will measure and record the flow of gas at the common header pipe leading to all control devices is part of the periodic monitoring plan for federally enforceable Condition 7 in the State Operating Permit, which limits the hourly and annual emission of NMOC, nitrogen oxides, carbon monoxide and sulfur dioxide. Hourly and annual limits on these pollutants will be periodically monitored by performing calculations utilizing emission factors generated during the initial performance test on the enclosed flare(s) and actual gas flow rate data collected by the gas measuring device. Calculations shall be performed monthly to determine both the hourly average and annual emissions of each pollutant. It should be noted that the emission limits contained within this condition were based upon emissions expected when the landfill has reached its capacity and is generating the maximum expected amount of landfill gas. The maximum annual amount of landfill gas is not expected to be generated until the landfill closes in approximately 2050.

The following requirements come from State Operating Permit dated January 19, 2001

Condition 20 9 VAC 5-50-20 E	Emissions shall be controlled by proper operation and maintenance of the landfill gas collection and control system equipment. The permittee shall develop, maintain, and make available to all operators good operating procedures and a maintenance schedule for the LFG collection and control system. These procedures shall be based on the manufacturer's recommendations, at a minimum. Operating procedures and a maintenance schedule for all such equipment shall be established and made available to the DEQ, Fredericksburg Office, for review. All records required by this condition shall be on site for the most current five-year period and made available for inspection by the DEQ, Fredericksburg Office.

Part C - Recordkeeping (L01 - Landfill)

The following record keeping requirements come from 40 CFR 60 Subpart WWW:

60.753(b)(1) The permittee shall record instances when positive pressure occurs in efforts to avoid a fire.

60.753(d) The permittee shall develop a surface monitoring design plan that includes a topographical map with the monitoring route and the rationale for any site-specific deviations from the thirty-meter intervals.

60.758(a)
SOP - #16 The permittee shall keep five years of up-to-date, readily accessible, on site records of the design capacity report included in the application for State Operating Permit dated January 19, 2001, current amount of solid waste in-place, and the year-by-year waste acceptance rate. Off-site records may be maintained if they are retrievable within four hours. Either paper copy or electronic formats are acceptable.

60.758(b) The permittee shall keep up-to-date, readily accessible records for the life of the control equipment of the data listed below as measured during initial performance test or compliance determination. Records of subsequent tests or monitoring shall be maintained for a minimum of five years. Records of the control device vendor specifications shall be maintained until removed.

(a) Max expected gas generation flow rate.
(b) Density of wells, horizontal collectors, and surface collectors
(c) The flare type (i.e., steam-assisted, air assisted, or non-assisted), all visible emission readings, heat content determination, flow rate or bypass flow rate measurements, and exit velocity determinations made during the performance test as specified in 60.18; continuous records of the flare flame monitoring and records of all periods of operations during which the flare flame is absent.

60.758(c)
9 VAC 5-80-110.F The permittee shall keep for five years up-to-date, readily accessible continuous records of the following equipment operating parameters specified for monitoring:

(a) wellhead gauge pressures measured monthly
(b) wellhead temperatures measured monthly
(c) wellhead nitrogen or oxygen concentrations measured monthly
(d) total flow rate to control equipment measured at the common header pipe
(e) flow rates to control equipment bypasses or monthly visual inspection of bypass valve lock
(f) presence of flame in open flare and periods of time when not present
(g) temperature of enclosed flare(s)
(h) all three hour periods of enclosed flare operation during which the average combustion temperature was more than 28 EC below the average combustion temperature observed during the most recent performance test
(i) results of quarterly surface methane monitoring.

The requirement to measure and record the total flow rate of landfill gas to the control equipment is part of the periodic monitoring plan to enforce the hourly and

annual emission rates for pollutants contained in the State Operating Permit dated January 19, 2001.

60.758(d) The permittee shall keep for the life of the collection system an up-to-date, readily accessible plot map showing each existing and planned collector in the system and providing a unique identification location label for each collector, records of the installation date and location of all newly installed collectors, and documentation of the nature, date of deposition, amount, and location of asbestos-containing or non-degradable waste excluded from collection.

60.758(e) The permittee shall keep five years of up-to-date, readily accessible records of all collection and control system exceedances of the operational standards, the reading in the subsequent month whether or not the second reading is an exceedance, and the location of each exceedance.

The following condition is taken from 40 CFR 60, Subpart A, Section 7:

60.7(b) The permittee shall maintain records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of an affected facility; any malfunction of the air pollution control equipment; or any periods during which a continuous monitoring system or monitoring device is inoperative.

The following requirements come from State Operating Permit dated January 19, 2001:

SOP - #16
9 VAC 5-80-900 The permittee shall maintain records of all emission data and operating parameters necessary to demonstrate compliance with this permit. The content and format of such records shall be arranged with the DEQ, Fredericksburg Office. These records shall include, but are not limited to:

(a) The yearly throughput of landfill gas, calculated monthly as the sum of each consecutive twelve month period.
(b) The yearly accumulation of municipal solid waste, calculated monthly as the sum of each consecutive twelve month period.
(c) The yearly emission of NMOC (as hexane), nitrogen oxides (as nitrogen dioxide), carbon monoxide and sulfur dioxide calculated monthly as the sum of each consecutive twelve month period. The average hourly emission of NMOC, nitrogen oxides, carbon monoxide and sulfur dioxide calculated monthly as the quotient of the monthly emission of pollutants divided by the number of hours of operation during month.
(d) Scheduled and unscheduled maintenance, and operator training.
(e) All stack tests, visible emission evaluations and performance evaluations.

All records required by this condition shall be available for inspection by the DEQ and shall be current for the most recent five years.

The requirement to track the average hourly and annual emissions of pollutants is part of the periodic monitoring plan for federally enforceable Condition 7 in the State Operating Permit which limits the hourly and annual emission of NMOC, nitrogen oxides, carbon monoxide and sulfur

dioxide. Hourly and annual limits on these pollutants will be periodically monitored by performing calculations utilizing emission factors generated during the initial performance test on the enclosed flare(s) and actual gas flow rate data collected by the gas measuring device. Calculations shall be performed monthly to determine both the hourly average and annual emissions of each pollutant. It should be noted that the emission limits contained within this condition (SOP #7) were based upon emissions expected when the landfill has reached its capacity and is generating the maximum expected amount of landfill gas. The maximum annual amount of landfill gas is not expected to be generated until the landfill closes in approximately 2050.

Part D - Testing (L01-Landfill)

The following requirement is part of the periodic monitoring plan to assure compliance with federally enforceable emission limits contained in the State Operating Permit dated January 19, 2001

9 VAC 5-80-110.E Total landfill gas flow to the control device(s) shall be measured and recorded at a frequency of at least every fifteen minutes using a device calibrated according to the provisions contained in 40 CFR 60, Appendix A, Method 2E, Section 4.

Landfill gas flow data will be used along with stack test data collected on the enclosed flare to calculate the average hourly and annual emission of NMOC, nitrogen dioxide, carbon monoxide and sulfur dioxide.

The following testing requirements come from 40 CFR 60 Subpart WWW

60.753(c)(1) The nitrogen level at each well head shall be determined by using Method 3C;

60.753(c)(2) The oxygen level at each well head shall be determined by an oxygen meter using Method 3A except that

(i) The span shall be set so that the regulatory limit is between twenty and fifty percent of the span;
(ii) A data recorder is not required;
(iii) Only a zero and a span cal gas are required; ambient air may be used as span;
(iv) A calibration error check is not required;
(v) The allowable sample bias, zero drift, and cal drift are "10%.

60.754(d) For tests required by 60.752(b)(2)(iii)(B), Method 25C or Method 18 shall be used. If using Method 18, the minimum list of compounds to be tested is those in the most recent AP-42. The following equation shall be used to calculate efficiency:

Control Efficiency = (NMOCin-NMOCout)/(NMOCin) Where:
NMOCin=mass of NMOC entering control device
NMOCout=mass of NMOC exiting control device

60.755(b)(2) SOP - #15 The background concentration of methane during surface emissions monitoring shall be determined for the instrument measuring the surface concentrations of methane by moving the probe inlet upwind and downwind outside the boundary of the landfill at a distance of at least thirty meters from the perimeter wells.

60.755(b)(3) SOP - #15 Surface emission monitoring shall be performed in accordance with section 4.3.1of Method 21 of Appendix A except that the probe inlet shall be placed within five to ten centimeters of the ground. Monitoring shall be performed during typical meteorological conditions.

60.755(d) SOP - #15 The portable analyzer used to determine the surface methane concentration shall meet the instrument specifications provided in Section 3 of Method 21 of Appendix A, except that Amethane@ shall replace all references to VOC. The calibration gas shall be methane, diluted to a nominal concentration of 500 ppm in air. To meet the performance evaluation requirements in section 3.1.3 of Method 21, the instrument evaluation procedures of section 4.4 of Method 21 shall be used. The calibration procedures in 4.2 of Method 21 shall be followed immediately before commencing a surface monitoring survey.

The following conditions were taken from 40 CFR 60 Subpart A Section 18

60.18(f)(1) To determine visible emissions from the open flare, Reference Method 22 shall be used. The observation period is two hours and shall be used according to Method 22.

60.18(f)(3) The net heating value of the landfill gas shall be calculated using the following equation:

$$H_T = K \sum_{i=1}^{n} C_i H_i$$ Where:

H_T = net heating value of the sample, MJ/scm; where the net enthalpy per mole of landfill gas is based on combustion at 25°C and 760 mm Hg, but the standard temperature for determining the volume corresponding to one mole is 20°C.

K = constant, 1.740×10^{-7} (1/ppm)(g-mole/scm)(MJ/kcal) where the standard temperature for (g-mole/scm) is 20°C.

C_i = Concentration of sample component i in ppm on a wet basis as measured for organics by Reference Method 18 and measured for hydrogen and carbon monoxide by ASTM D1946-90 (incorporated by reference as specified in 40 CFR 60.17)

H_i = Net heat of combustion of sample component i, kcal/g-mole at 25°C and 760 mm Hg. The heats of combustion may be determined using ASTM D4809-95 (incorporated by reference as specified in 40 CFR 60.17) if published values are not available or cannot be calculated.

60.18(f)(4) The actual exit velocity of the flares shall be determined by dividing the volumetric flowrate (in units of standard temperature and pressure), as determined by Reference Methods 2, 2A, 2C, or 2D as appropriate; by the unobstructed (free) cross sectional area of the flare tip.

The following testing requirements are from 40 CFR 60 Subpart A Section 8

60.8(a) Within sixty days after achieving the maximum production rate but not later than 180 days after initial startup, ...shall conduct performance tests and furnish DEQ with two copies of the written report of the results of such performance tests.

60.8(b)	Performance tests shall be conducted and data reduced in accordance with the test methods and procedures contained in WWW.
60.8(c)	Testing shall be conducted under representative conditions.
60.8(d)	The permittee shall provide DEQ at least thirty days prior notice of any performance test.
60.8(e)(1) SOP - #5	The permittee shall provide sampling ports adequate for test methods applicable to each facility.
60.8(e)(2)	The permittee shall provide safe sampling platforms.
60.8(e)(3)	The permittee shall provide safe access to sampling platforms
60.8(e)(4)	The permittee shall provide utilities for sampling and testing equipment.
60.8(f)	Unless otherwise specified, each test shall consist of three separate runs. The arithmetic means of the results of the three runs shall apply for determining compliance with a standard.

The following requirements are from the State Operating Permit dated January 19, 2001

40 CFR 60.754(d) 9 VAC 5-80-880 SOP - #10	No later than 180 days after initial startup of the enclosed flare(s), initial performance test(s) shall be conducted on the enclosed flare exhaust stack to determine compliance with the emission limitations specified in Conditions A.3 and or A.16 as follows: NMOC reduction efficiency or outlet concentration level (%, ppmv) and NMOC, nitrogen oxides (as nitrogen dioxide), carbon monoxide and sulfur dioxide emission rates (lb/hr). The stack tests shall be conducted and reported and data reduced as set forth in 9 VAC 5-50-30. The NMOC emission rate, as hexane, shall be determined using the procedures in 40 CFR Part 60, Appendix A, Method 25C or Method 18. If using Method 18, the minimum list of compounds to be tested for shall be those published in the most recent Compilation of Air Pollutant Emission Factors (AP-42). The rate of emission of nitrogen oxides, carbon monoxide and sulfur dioxide shall be determined using the procedures in 40 CRF Part 60, Appendix A, Method 7, Method 10 and Method 6, respectively. The details of the tests are to be arranged with the DEQ, Fredericksburg Office. The permittee shall submit a test protocol at least thirty (30) days prior to testing. Two copies of the test results shall be submitted to the DEQ, Fredericksburg Office, within forty five days after test completion and shall conform to the test report format enclosed with this permit.

As part of the periodic monitoring plan to assure compliance with hourly and annual emission limits contained in Condition 7 of the State Operating Permit (SOP), the requirement to test the enclosed flares for emissions of nitrogen oxides, carbon monoxide and sulfur dioxide has been added to the existing language of SOP Condition 11. This data, along with the measurement of actual gas flow to the flare, will be used to calculate

annual and average hourly emissions of these pollutants on a rolling twelve month basis.

9 VAC 5-50-30 SOP - #11 Concurrently with the initial performance tests on the enclosed flare(s), Visible Emission Evaluations (VEE) in accordance with 40 CFR, Part 60, Appendix A, Method 9, shall also be conducted on the enclosed flare exhaust stack to determine compliance with the visible emission limitation specified in Condition A.17. The VEE test shall consist of ten sets of twenty-four consecutive observations (at fifteen second intervals) to yield a six minute average. The details of the tests are to be arranged with the DEQ, Fredericksburg Office. The evaluation shall be performed no later than 180 days after initial start up of the enclosed flare. Should conditions prevent concurrent opacity observations, the Fredericksburg Office of the DEQ shall be notified in writing, within seven days, and visible emissions testing to be rescheduled within thirty days. A rescheduled VEE shall be conducted under the same conditions (as possible) as the initial performance test(s). Two copies of the test result shall be submitted to the DEQ, Fredericksburg Office, within forty five days after test completion and shall conform to the test report format enclosed with this permit.

9 VAC 5-50-30 SOP - #12 For the first two quarters after initial performance testing, in addition to reporting required by Subpart WWW (40 CFR 60.757), the operator of the MSW Landfill Facility, owner or permittee shall conduct quarterly sampling and analysis for constituent gases in the LFG Collection and Control System headers between the centrifugal blower discharge and upstream of the inlet to the enclosed flare system and will conduct annual gas chromatograph (GC) sampling of the gas stream effluent from the enclosed flare system. In accordance with a methodology to be agreed upon by Fredericksburg Office of the DEQ, the operator of the MSW Landfill Facility, owner or permittee shall report gas stream sampling or parametric measurements necessary to demonstrate compliance with the emissions limitations specified in Condition A.16.

9 VAC 5-50-40 B SOP - #13 All continuous monitoring systems and monitoring devices required by Subpart WWW ('60.756) shall be installed and operational prior to conducting the initial performance tests required by Condition D.13. Verification of operational status shall, as a minimum, include completion of the manufacturer's written requirements or recommendations for installation, operation and calibration of the device.

In summary, this permit will contain several conditions that require one-time-only tests. These tests consist of:

1. *Testing the enclosed flare for destruction efficiency or ppm of NMOCs in outlet exhaust for compliance with NSPS Subpart WWW and testing enclosed flare outlet for NOx, CO and SO_2.for compliance with Condition A.16.*
2. *Testing the flares for visible emissions for compliance with limits contained in A.11 & A.17. Also, the exit velocity of each flare must be tested in accordance with 60.18 as well as the heat content of the landfill gas.*

There will also be a requirement for quarterly testing for constituent gases in the collection system header and annual testing for NMOCs from the enclosed flare.

E - Reporting (L01 - Landfill)

The following reporting requirements are from 40 CFR 60 Subpart WWW:

60.753(b)(1) Records shall be submitted in annual reports of instances when positive pressure at a wellhead occurs due to efforts to avoid a fire.

60.757(f) Within 180 days of installation and start-up of the collection and control system, shall submit annual reports of the following information, and shall include the initial performance test report.

(1) Value and length of times for exceedance of pressure, temperature, nitrogen or oxygen measurements at wellheads; for temperature at the enclosed flare; for heat sensing at the flame of the open flares.
(2) Description, duration and volume of all periods when the gas stream is diverted from the control device through a bypass line or the indication of bypass flow.
(3) Description and duration of all periods when the control device was not operating for a period exceeding 1 hour and length of time the control device was not operating.
(4) All periods when the collection system was not operating in excess of five days.
(5) Location of each exceedance of the 500 ppm methane concentration and the concentration recorded at each location for which an exceedance was recorded in the previous month.
(6) Date of installation and the location of each well or collection system expansion added due to exceedances of oxygen, nitrogen, pressure; due to the age of the initial solid waste placed in each cell or group of cells; or due to surface methane concentration exceedances.

60.757(g) The permittee shall include the following information with the initial performance test report:

(1) Diagram of the collection system showing collection system positioning including all wells, horizontal collectors, surface collectors, or other gas extraction devices, including the locations of any areas excluded from collection and the proposed sites for the future collection system expansion.
(2) Data upon which the sufficient density of wells, horizontal collectors, surface collectors, or other gas extraction devices and mover equipment sizing are based.
(3) Docs of the presence of non-degradable material in areas with wells excluded from the collection system.
(4) Sum of gas generation flow rates for all areas from which collection wells have been excluded.
(5) Provisions for increasing gas mover equipment capacity with increased gas generation flow rate if present gas mover equipment is inadequate.
(6) Provisions for control of off-site migration.

The following conditions were taken from 40 CFR 60 Subpart A Section 7 and the State Operating Permit dated January 19, 2001

60.7(a)(1) SOP - #17 Notification of date construction commenced on the enclosed flare postmarked no later than thirty days after such date.

60.7(a)(3) SOP - #17 Notification of the actual date of initial startup of the enclosed flare postmarked within fifteen days after such date.

60.7(a)(6) SOP - #17 Notification of the anticipated date for conducting stack tests and opacity observations. The notification shall be postmarked not less than thirty days prior to such date.

Part F - Requirements for Landfill Closure (L01 - Landfill)

The following reporting requirements are from 40 CFR 60 Subpart WWW

The landfill does not foresee closing until near the mid part of the 21st century, however, these conditions will eventually apply to the facility and therefore are included in the Title V permit.

60.752(b)(2)(v) The collection and control system may be capped or removed provided that all the following conditions are met.

(1) The landfill shall be a closed landfill as defined in 60.751 (solid waste is no longer being placed and in which no additional solid wastes will be placed without first filing a notification of modification as prescribed under 60.7) A closure report shall be submitted to DEQ.

(2) The collection and control system shall have been operating at least fifteen years

(3) The calculated NMOC gas production shall be less than 50 megagrams per year on three successive test dates. The test dates shall be no less than ninety days apart and no more than 180 days apart.

60.754(b) The permittee shall calculate the NMOC emission rate for purposes of determining when the system can be removed using the following equation:

$M_{nmoc}=1.89 \times 10^{-3} QlfgC_{nmoc}$ where:

M_{nmoc} = mass emission rate of NMOC, Mg/year

Qlfg = flow rate of landfill gas, cubic meters/minute

Q_{nmoc} = NMOC concentration, ppmv as hexane

(1) Qlfg shall be determined by measuring the total landfill gas flow rate at the common header pipe to the control device using a gas flow measuring device calibrated according tot he provisions of section 4 of Method 2E, Appendix A.

(2) Cnmoc shall be determined by collecting and analyzing landfill gas sampled from the common header pipe using Method 25C or Method 18. The minimum list of compounds shall be those published in the most recent version of AP-42 for Method 18. The sample location on the common header pipe shall be before any condensate removal or refining units. Shall divide the NMOC concentration from Method 25C by six to convert from C_{nmoc} as carbon to C_{nmoc} as hexane.

60.757(d) The permittee shall submit a closure report to DEQ within thirty days of waste acceptance

cessation. DEQ may request additional information as may be necessary to verify that permanent closure has taken place in accordance with the requirements of 40 CFR 258.60. If a closure report has been submitted to the DEQ, no additional wastes may be placed into the landfill without filing a notification of modification.

60.757(e) The permittee shall submit an equipment removal report to the DEQ thirty days prior to removal or cessation of operation of the control equipment. The report shall contain a copy of the closure report; a copy of the initial performance test report demonstrating that the fifteen year minimum control period has expired; and dated copies of three success NMOC emission rate reports demonstrating the landfill is no longer producing 50 Mg or greater of NMOC per year. DEQ may request additional information to verify that all conditions for removal have been met.

Streamlined Requirements (L01 - Landfill)

There are no streamlined requirements for the landfill. However, the following requirements have been omitted from the Title V Operating Permit because they have already been fulfilled and are now obsolete or the condition is from the State Operating Permit and has been replaced by more specific conditions of the same stringency.

Obsolete Conditions

The following reporting requirements are from 40 CFR 60 Subpart WWW

60.752(b) ...shall comply with paragraph (b)(2) of this section or calculate an NMOC emission rate for the landfill using procedures specified in ...

The facility submitted a report showing emissions of NMOC greater than 50 megagrams on January, 1999 and as such this requirement will not be carried over into the Title V permit. Emission calculations using EPAs Landfill Gas Emission Model with site specific Tier 2 data is included in Appendix B.

60.754(a) Calculation of NMOC:

This requirment has been satisfied. See 40 CFR 60.752(b).

60.757 (a) - Initial Design Capacity Submittal Requirement

In the Spring of 1996, the permittee applied for a State Operating Permit that was issued on June 28, 1996. Included in the application for the SOP was the equivalent of a Design Capacity Report. As such, this requirement will not be carried over into the Title V permit.

60.757 (b) - Initial Nonmethane Organic Compounds (NMOC) Emission Rate Report Requirement

This requirement has been satisfied. See 40 CFR 60.752(b).

Redundant Conditions:

The following requirements are from 40 CFR Subpart A:

60.18(b)(2) Flares shall be operated with a flame present at all times...

In WWW, the facility must monitor the flame to ensure there is a flame present when gases are routed to the flare. The facility must report any times when the landfill gas is routed to a flare having no flame as an exceedance. Therefore, this condition is the same as the requirement in WWW and won=t be carried into the TV permit.

60.18(e) The affected facilities shall be operated at all times when emissions may be vented to them.

This requirement, along with corresponding monitoring and record keeping requirements, is in WWW. Since this is the same condition, it will not be carried over into the Title V permit again.

60.18(f)(2) The presence of a flare pilot flame shall be monitored using a thermo couple or any other equivaplent device to detect the presence of a flame.

This requirement is also in WWW, which requires that a device monitor either the presence of a flame or a pilot light. Only the WWW condition was carried over to the Title V permit.

The following conditions from the State Operating Permit dated January 19, 2001, were omitted from the Title V Permit because they were redundant upon conditions required by Subpart WWW:

SOP - #14 The operator of the MSW Landfill Facility, owner or permittee shall demonstrate compliance with operational standards for the LFG Collection and Control System required by Subpart WWW (40 CFR 60.753) in accordance with appropriate subsection(s) of Subpart WWW (40 CFR 60.755). The operator of the MSW Landfill Facility, owner or permittee shall demonstrate compliance of the LFG Collection and Control System requirements of Subpart WWW (40 CFR 60.752) in accordance with appropriate subsection(s) of Subpart WWW (40 CFR 60.755). All reports required to demonstrate compliance with the compliance requirements of Subpart WWW (40 CFR 60.755) shall be prepared and submitted to the Fredericksburg Office of the DEQ as required by Subpart WWW (40 CFR 60.755).

This Condition is a blanket requirement to comply with the standards for limiting emissions through operating the collection and control system (as required by 40 CFR 60.752 and 60.753) by using the compliance provisions of 60.755. The requirements of this Condition are redundant with the following Conditions contained in Section III. Landfill Requirments (L01): A.8, A.10, B.1, B.2, B.3, Bl4, B.5, D.6, D.7 and D.8. The requirements of the Conditions contained in the Title V Permit are more explicit in detail and as such, the Condition from the SOP was not included.

SOP - #16 The LFG Collection and Control System and flare system shall be monitored and all appropriate data recorded as required in Subpart WWW (Subsection 60.756).

This Condition is a blanket requirement to comply with the monitoring provisions for the collection and control system contained in 60.756. The requirements of this Condition are redundant with the following Conditions contained in Section III. Landfill Requirements (L01): B.6, B.7, and B.8. The requirements of the Conditions contained in the Title V Permit are more explicit in detail and as such, the Condition from the SOP was not included.

Section IV

Part A - Facility Wide Requirements: Landfill Surface and Roads (Emission Unit - L02)

Limitations (L02 - Landfill Surface and Roads)

The following Virginia Administrative Codes that have specific emission requirements have been determined to be applicable:

9 VAC 5-50-80 - Standard for visible emissions
9 VAC 5-50-90 - Standard for fugitive dust/emissions

Also, the facility is required to develop a Dust Control Plan with good written operating procedures.

Monitoring and Recordkeeping (L02 - Landfill Surface and Roads)

In lieu of conducting periodic evaluations using EPA Method 9 to demonstrate compliance with the facility wide visible emission limit, the permittee shall perform a daily visual survey of the trafficable roads at the site and landfill activities for sources of excessive emissions. The reason for not requiring EPA Method 9 is that there is no stack in the landfill to perform the test. The presence of excessive emissions shall require further investigation as to the cause of the emissions and timely corrective action shall be required. All observations and corrective actions taken shall be logged and recorded. These records shall be available on site for inspection by the DEQ and shall be current for the most recent five years.

There is reasonable assurance that violations of the visible emission standards should not occur if the permittee complies with the permit condition to mitigate fugitive dust, implements the operating procedures included in the dust control plan, performs a daily visible emission survey and conducts timely corrective actions as needed.

Testing (L02 - Landfill Surface and Roads)

The permit does not require source emission tests. A table of test methods has been included in the permit if further testing for compliance purposes is performed. The Department and EPA have authority to require testing not included in this permit if necessary to determine compliance with an emission limit or standard.

Reporting (L02 - Landfill Surface and Roads)

No specific reporting has been included for landfill surface and roads.

Streamlined Requirements (L02 - Landfill Surface and Roads)

There are no streamlined requirements for landfill surface and roads.

GENERAL CONDITIONS

The permit contains general conditions required by 40 CFR Part 70 and 9 VAC 5-80-110, that apply to all Federal operating permit sources. These include requirements for submitting semi-annual monitoring reports and an annual compliance certification report. The permit also requires notification of deviations from permit requirements or any excess emissions, including those caused by upsets, within one business day.

STATE ONLY APPLICABLE REQUIREMENTS

No state only applicable requirements apply to this facility and none have been included in the permit.

FUTURE APPLICABLE REQUIREMENTS

No future applicable requirements apply to this facility and none have been included in the permit.

INAPPLICABLE REQUIREMENTS

No specific inapplicable requirements were identified for this facility.

COMPLIANCE PLAN

This facility has been inspected and found to be in compliance. No compliance plan is needed for this facility.

INSIGNIFICANT EMISSION UNITS

The insignificant emission units are presumed to be in compliance with all requirements of the Clean Air Act as may apply. Based on this presumption, no monitoring, record keeping or reporting shall be required for these emission units, other than what is explicitly stated in the permit, in accordance with 9 VAC 5-80-110. There is one applicable requirement explicitly stated in the permit. The requirement is applicable to the two leachate storage tanks (P04 and P05) and deals solely with Record Keeping. The requirement is given here:

Record Keeping (P04 & P05 - Leachate Storage Tanks)

<u>The following condition is taken from 40 CFR 60, Subpart Kb):</u>

40 CFR 60.116b(b) 9 VAC 5-50-410	The permittee shall keep readily accessible records showing the dimensions of the leachate storage tanks and their storage capacities. These records shall be kept for the life of the leachate storage tanks.

Emission Unit No.	Emission Unit Description	Citation[1] (9 VAC_)	Pollutant Emitted (5-80-720 B.)	Rated Capacity (5-80-720 C.)
P002	diesel storage tank	5-80-720.A.25	VOC	10,000 gal
P003	oil recovery tank	5-80-720.C.3	VOC	500 gal
P004	leachate tank	5-80-720.B.2	VOC	250,000 gal
P005	leachate tank	5-80-720.B.2	VOC	250,000 gal
F001	emergency generator	5-80-720.C.1.a	NOx	55 kW

[1]The citation criteria for insignificant activities are as follows:
9 VAC 5-80-720 A - Listed Insignificant Activity, Not Included in Permit Application
9 VAC 5-80-720 B - Insignificant due to emission levels
9 VAC 5-80-720 C - Insignificant due to size or production rate

CONFIDENTIAL INFORMATION

The permittee did not submit a request for confidentiality. All portions of the Title V application are suitable for public review.

PUBLIC PARTICIPATION

The proposed permit will be place on public notice in The Journal dated Wednesday, June 13, 2001.

ATTACHMENT A

Existing State Operating Permit dated January 19, 2001

ATTACHMENT B
Landfill Gas Emission Model Results for NMOCs, Methane and HAPs